Remarks

The Examiner has objected to the title as not being descriptive in response to which appropriate correction has been taken.

Claims 1 is objected to due to recitation of "positioning that detection window ...". In response thereto claim 1 has been amended accordingly to eliminate the objected language. Review and acceptance is requested.

Claim 9 has also been objected to, in response to which appropriate amendment has been taken.

Claims 16 stands rejected under 35 USC 112 first paragraph for failing to comply with enabling requirement. In response thereto, claim 16 has been cancelled.

Claim 1 stands rejected under 35 USC 112 second paragraph as being indefinite due to recitation of "positioning said detection window ..." in combination with application of the majority voting in step c) and the decoding of the bit stream in step d). In response thereto, claim 1 has been amended, thereby clarifying the recitations. Review and acceptance is requested.

Claim 7 stands rejected under 35 USC 112 second paragraph for use of the word "programmed". In response thereto, claim 7 has been cancelled.

Claim 9 stands rejected under 35 USC 112 second paragraph for the same reason as claim 1. In response thereto, similar amendments to claim 9 have been taken as in claim 1, thereby obviating this rejection. Review and acceptance is requested.

Claim 16 stands rejected under 35 USC 112 second paragraph due to use of the words "programmed". In response thereto, claim 16 has been cancelled.

Claim 17 stands rejected under 35 USC 112 second paragraph due to recitation of "instructions". In response thereto, claim 17 has been amended to explicitly recite instructions which are executable by a computer. In so doing, claim 17 satisfies the clarification issue.

Claims 7, 8, 16 and 17 stand rejected under 35 USC 101 as being directed to non-statutory subject matter. In response thereto, claims 7, 8 and 16 have been cancelled. Claim 17 has been redirected to a data storage medium having instructions executable by a computer or a microprocessor. In so doing, the Applicant explicitly recites language which is statutory. In particular, the Examiner is referred to MPEP 2106 IV B, wherein is stated:

> "When functional descriptive material is recorded on some computer readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare in re Lowry, 32 F.3d 1579, 158384, 32 USPQ 2d 1031, 1035 (Fed Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory").

The Examiner is also referred to the patentable subject matter content of amended claim 17 as stipulated in MPEP 2106 IV B(b):

"When a computer program is recited in conjunction with a physical structure, such as a computer memory, Office personnel will treat the claim as a product claim".

Review and acceptance is therefore requested as is withdrawal of the 35 USC 101 rejection.

Claims 1, 4, 9, 12 and 15 stand rejected under 35 USC 102(b) as being anticipated by Hedberg '559. Claims 2 and 10 stand rejected under 35 USC 103(a) as being unpatentable over Hedberg in view of admitted prior art. Claims 5, 7, 8, 13, 16 and 17 stand rejected under 35 USC 103(a) view of Examiner Official Notice.

The Examiner has also indicated that claim 9 is essentially a duplicate of claim 15. In response thereto, claim 15 has been amended accordingly.

The Examiner has also indicated that claims 3, 6, 11 and 14 are objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Applicant respectfully disagrees with the rejection of independent claims 1 and 9 under 35 USC 102 as being anticipated by Hedberg '559 for the following reasons.

Hedberg is directed to a system in which the transmitter sends a bit stream composed of multiple copies of the data being sent by modulating electrical, optical or radio frequency signals. In the example given in the Hedberg disclosure the transmitted stream consists of five identical repetitions of each data word. The data word is encoded with a BCH error correcting code. After passing through the network the receiver acquires

the electrical, optical or RF stream and decodes it. This is executed by performing independent bit decisions on each bit of each copy of the data (using a procedure which is not described) and by processing these bit decisions. That processing is effected by defining a window which combines some number of bits from the various repetitions of the data. These data are combined to form a "compiled word" that consists of the bits taken from specific places in specific copies of the data. The bits are reordered as necessary such as the compiled word is identical to original transmitted word if the bit stream is received without errors. A "sliding window" is thereby defined which is used to make several "compiled words" by picking up contiguous portions from distinct copies of the data. This is shown in figures 9a through 9d. The end result is a series of "compiled words" each of which contains a representation of all the bits in the transmitted word. In the example given, 30 compiled words are identified from five repetitions of the original word. Each of the compiled words is then decoded using a BSH decoder. A code word is considered correct if it contains no BSH errors or if two distinct compiled code words with BSH decoding errors decode to the same value with BSH encoder indicating different bits in error. Hedberg allows for a majority voting decision based on the decoded values of the multiple compiled code words or on portions of the compiled code words.

In contrast thereto, the instant invention as claimed is directely to a technique which is substantially simpler than that of Hedberg. Moreover, Hedberg presumably provides a different level of tolerance to errors than that of the instant invention. In any event, Hedberg transmits the data words multiple times, decoding the bits of each of those copies, and then combing those decoded bits to make a higher level decision on the value of the bits in the original word, based on multiple compiled words. In contrast thereto, the method and associated device in accordance with the invention as claimed in claims 1, 9 and 17 inherently describes a

process in which the data need only be transmitted once with a reception decision being made based on oversampling of that single data transmission. Seen in this manner, Hedberg is a higher level technique than that in accordance with the instant invention. The bit stream decoder in accordance with the instant invention is analogous to bit decision means of Hedberg for each bit of each of the redundant copies of the data. Seen in another fashion, Hedberg discloses what to do after a series of bit decisions have been made but does not indicate how those decisions are actually made. In contrast thereto, the method and device in accordance with the invention as claimed in claims 1, 9 and 17 describes an encoding method and a corresponding decoding/decision technique which permits a series of bit decisions to be made. Conceptionally, a system employing the technique described by Hedberg could therefore apply the inventive techniques for each bit decision in each received copy of the data.

Associated with this technical difference is the intrinsic property that the Hedberg patent relies on an underlying data rate of media which must be several times a resulting rate of usable decoded data. This is the case since the Hedberg technique relies on making individual low level bit decisions at the rate of bits on the link and the high level data is repeated multiple times to improve the probability of receiving a correct message in the presence of errors. For example, a word of 50 bits requires the Hedberg system to actually transmit 250 bits (five redundant copies of the same 50 bit word). Assuming, for example, this is conveyed in 5 µs, then the underlying data rate of the link must be 50 Mbit/s. This is necessary because each of the low level bits is independent and the link must therefore be capable of carrying data at the rate of the low level bits.

In contrast thereto, the technique in accordance with the invention is based on oversampling (sampling at a rate higher than the encoded rate on the link) with the intention of eliminating glitches that are shorter than a single bit. For the system in accordance with the invention, the same amount of data, i.e. 50 bits, conveyed in the same amount of time (5 µs) would require an underlying capability of only 10 Mbit/s, since the data is not repeated. In other words, in accordance with the method and device of the invention, although an oversampling is effected to make the bit decisions, the link itself must only carry data at the nominal bit rate.

For the reasons stated above, fundamental differences obtain between the recitation of independent claims 1, 9, and 17 the overall disclosure of Hedberg. The differences clearly obviate interpretation of the language of claims 1, 9 and 17 as reading on the Hedberg disclosure. The anticipation rejection of claims 1 and 9 over the Hedberg reference is therefore deemed inappropriate. Claim 17 is substantially equivalent to claim 1 and is therefore also allowable. The dependent claims inherit the limitations of the respective base claim and are therefore similarly distinguished from Hedberg alone or in combination for the reasons given. The Applicant therefore requests favorable review on the part of the US PTO and passage to issuance.

No new matter has been added in this amendment.

Respectfully submitted,

Paul Vincent

Dr. Paul Vincent

Registration number 37,461

Nov. 16, 2007

Date

Dreiss, Fuhlendorf, Steimle & Becker
Patentanwälte
Postfach 10 37 62
D-70032 Stuttgart
Germany
Telephone: 49-711-24 89 38-0
Fax : 49-711-24 89 38-99